

CLAIMS

1. A thermoplastic saturated norbornene resin film,
which is obtainable by using a thermoplastic
5 saturated norbornene resin composition containing a
thermoplastic saturated norbornene resin in an amount of
100 parts by weight and a rubber polymer in an amount of 5
to 40 parts by weight, parallel transmittance being 87% or
more.
- 10 2. The thermoplastic saturated norbornene resin film
according to claim 1,
wherein the difference of refractive indexes between
the thermoplastic saturated norbornene resin and the rubber
15 polymer is 0.2 or less.
3. The thermoplastic saturated norbornene resin film
according to claim 1 or 2,
which has a tensile elastic modulus of 900 MPa or
20 higher and a tensile elongation at break of 4 to 40%.
4. The thermoplastic saturated norbornene resin film
according to claim 1, 2 or 3,
wherein residual retardation is 3 nm or lower and
25 displacement of an optical axis is $\pm 10^\circ$ or smaller with
respect to a machine direction.
5. The thermoplastic saturated norbornene resin film
according to claim 1, 2 or 3,
30 wherein residual retardation is 1 nm or lower.
6. The thermoplastic saturated norbornene resin film
according to claim 1, 2, 3, 4 or 5,
wherein the difference between the maximum thickness
35 and the minimum thickness in measuring a thickness by a

method according to JIS K 7130 is 5 μm or smaller.

7. The thermoplastic saturated norbornene resin film according to claim 1, 2, 3, 4, 5 or 6,

5 which may be rewinded without breaking with tension of 500 N/650 mm.

8. The thermoplastic saturated norbornene resin film according to claim 1, 2, 3, 4, 5, 6 or 7,

10 wherein the rubber polymer is a styrenic elastomer.

9. The thermoplastic saturated norbornene resin film according to claim 8,

15 wherein the styrenic elastomer is a styrene-ethylene-butylene copolymer, the content of a styrene component being 25 to 50% by weight and the content of an ethylene component being 25 to 50% by weight.

20 10. The thermoplastic saturated norbornene resin film according to claim 1, 2, 3, 4, 5, 6, 7, 8 or 9,

 wherein the thermoplastic saturated norbornene resin composition further contains a thermoplastic resin having a number average molecular weight of 300 to 10,000.

25 11. The thermoplastic saturated norbornene resin film according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9 or 10,

 wherein a photoelastic coefficient is $2.0 \times 10^{-11} \text{ Pa}^{-1}$ or smaller.

30 12. An optical film,

 which comprises the thermoplastic saturated norbornene resin film according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11.

35 13. A protective film for a polarizer,

which comprises the thermoplastic saturated norbornene resin film according to claim 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 or 11.

5 14. A retardation film,
 which comprises the thermoplastic saturated
norbornene resin film according to claim 1, 2, 3, 4, 5, 6,
7, 8, 9, 10 or 11.

10 15. A polarizing plate,
 which comprises a protective film for a polarizer,
comprising a norbornene resin composition, and a polarizer,
parallel transmittance being 40% or more, and the
15 polarizing plate not breaking in peeling off the polarizing
plate with a tensile speed of 300 mm/min and tension of 2.5
to 3 N/25 mm under the conditions of a 180 degree peel test
according to JIS Z 1528.

 16. The polarizing plate according to claim 15,
20 wherein a rate of change in dimensions measured
before and after heating at 90°C for 24 hours is 2% or less.

 17. A polarizing plate,
 which is obtainable by laminating the retardation
25 film according to claim 14 directly on at least one side of
a polarizer.

 18. A method of producing the thermoplastic
saturated norbornene resin film according to claim 1, 2, 3,
30 4, 5, 6, 7, 8, 9, 10 or 11, by a melt extrusion process,
 wherein a melting temperature of the thermoplastic
saturated norbornene resin composition during melting the
thermoplastic saturated norbornene resin composition and
sending the thermoplastic saturated norbornene resin
35 composition to a die is a glass transition temperature of

the thermoplastic saturated norbornene resin plus 135°C or lower and an average residence time from melting the thermoplastic saturated norbornene resin composition to sending the thermoplastic saturated norbornene resin composition to a die is 40 minutes or less.

19. The method of producing a thermoplastic saturated norbornene resin film according to claim 18, wherein temperature, immediately prior to contact with a chill roll, of the thermoplastic saturated norbornene resin composition extruded from a die is a glass transition temperature of the thermoplastic saturated norbornene resin plus 50°C or more.

20. The method of producing a thermoplastic saturated norbornene resin film according to claim 18, wherein temperature, immediately prior to contact with a chill roll, of the thermoplastic saturated norbornene resin composition extruded from a die is a glass transition temperature of the thermoplastic saturated norbornene resin plus 80°C or more.